

TUTORIAL Version 1

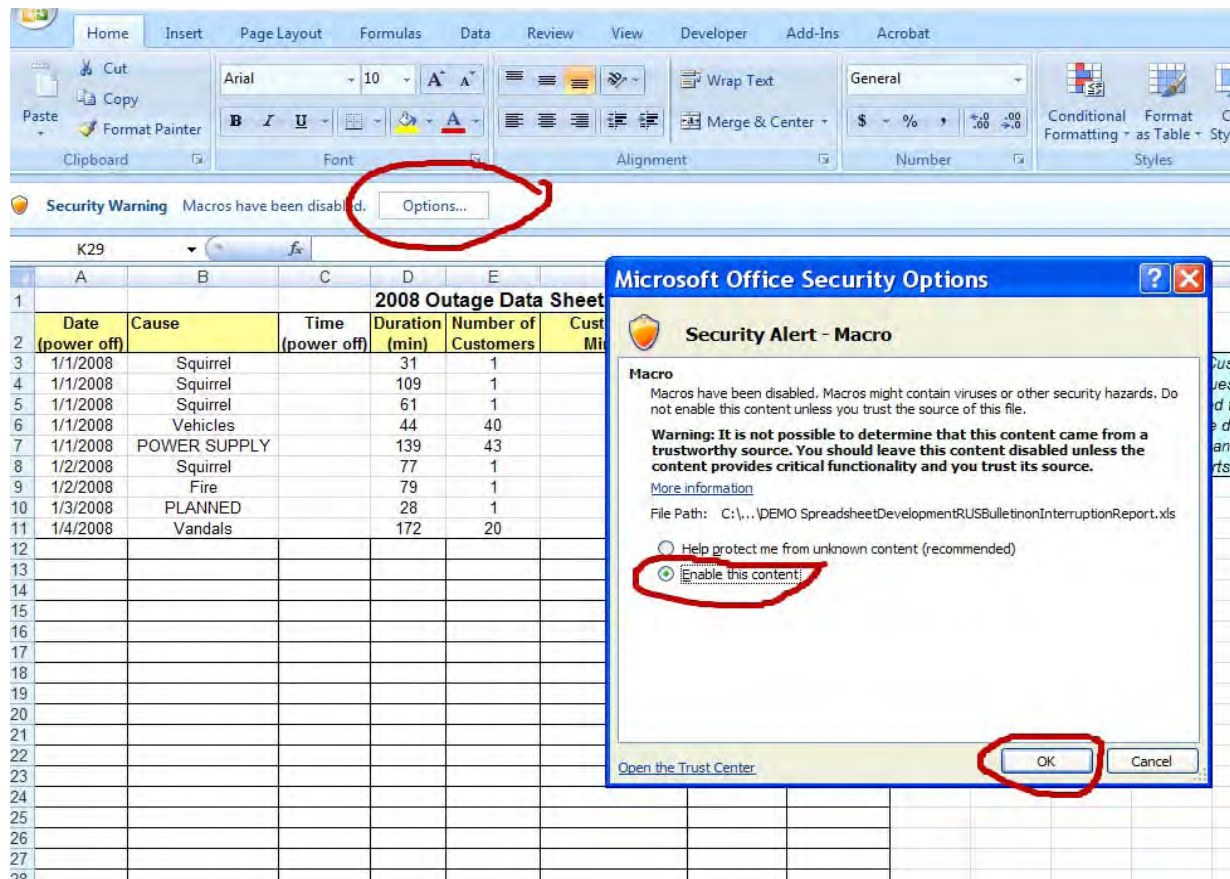
RUS Bulletin 1730a-119 TMED Excel Software (for Microsoft Office Excel 2007)

Note: The following excel files are required to complete this tutorial:

1. DEMO SpreadsheetDevelopmentRUSBulletinonInterruptionReport.xls
2. DEMO outage raw data.xls

Step 1

- Open **TMED Demo Excel Spreadsheet**
 - DEMO SpreadsheetDevelopmentRUSBulletinonInterruptionReport.xls
- Click **“Macro Options”/Select “Enable this content”/Click “OK Button”**



Step 2

- A box titled “Follow Instructions Below” will appear
- Select **“Create yearly Outage sheet/Paste Directly in Outage Data Sheet”** from the “Step 1 – Create Outage Data Sheet” box
- Click “Continue” button

The screenshot shows a Microsoft Excel spreadsheet titled "2008 Outage Data Sheet". The spreadsheet has columns for Date, Cause, Time (power off), Duration (min), Number of Customers, and Customers. The data is as follows:

Date	Cause	Time (power off)	Duration (min)	Number of Customers	Customers
1/1/2008	Squirrel		31	1	
1/1/2008	Squirrel		109	1	
1/1/2008	Squirrel		61	1	
1/1/2008	Vehicles		44	40	
1/1/2008	POWER SUPPLY		139	43	
2/2/2008	Squirrel		77	1	
2/2/2008	Fire		79	1	
3/3/2008	PLANNED		28	1	
4/4/2008	Vandals		172	20	

Overlaid on the spreadsheet is a dialog box titled "Follow Instructions Below:". The dialog box contains three sections:

- Step 1 - Create Outage Data Sheet**
 - ☐ Input Data From RUS Interruption Report Form or ;
 - ☒ Create Yearly Outage Sheet/Paste Directly in Outage Data Sheet
- Step 2 - Create SAIDI Sheet**
 - ☐ Create SAIDI Sheet
- Step 3 - Create TMED Sheet**
 - ☐ Create TMED/Part G Sheet
 - ☐ View An Existing Sheet

At the bottom of the dialog box are three buttons: "Continue", "Cancel", and "Help". The "Continue" button is circled in red.

Step 3

- A “Manual Input” box will appear
- Enter the **oldest year** of raw data available – in this demo “2006” is the oldest year, thus, we type “**2006**” on the entry field
- Click “OK”

Page Layout Formulas Data Review View Developer Add-Ins Acrobat

Font Alignment Number Styles

2008 Outage Data Sheet

	C	D	E	F	G	H	I	J	K	L
	Time (power off)	Duration (min)	Number of Customers	Customers- Minutes	Date(power Restored)	Time(power Restored)				
I		31	1	31						
I		109	1	109						
I		61	1	61						
s		44	40	1760						
PPLY		139	43	5977						
I		77	1	77						
		79	1	79						
D		28	1	28						
s		172	20	3440						

NOTE: Any cells in columns F (Customers-Minutes) with Red font are not positive values, a mistake happened when entered the data from RUS Interruption Reports. Please double check the data completely (not leave blank row) and data from RUS Interruption Reports

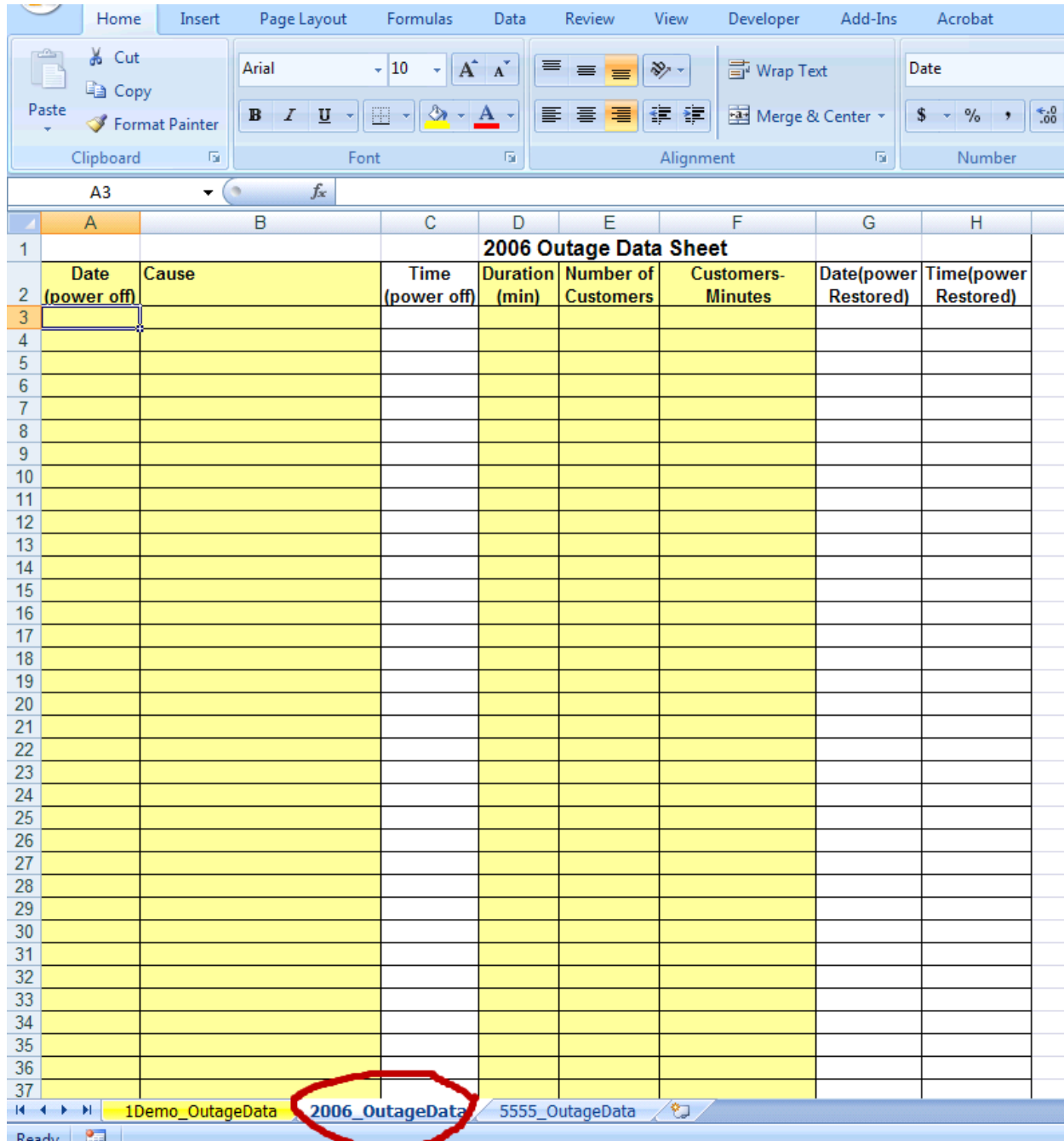
Manual Input

Enter Year To Create

2006 OK

Step 4

- A new blank outage data worksheet titled “2006_OutageData” is created



Step 5

- Open **Outage Raw Data Demo** Excel spread sheet
 - *DEMO outage raw data.xls*
- This is the excel file **containing the Raw Data** that we will copy and paste to the **TMED worksheet**

DEMO outage raw data.xls

2006 RAW Outage Data (DEMO)							
Date (power off)	Cause	Time (power off)	Duration (min)	Number of Customers	Customers-Minutes	Date(power Restored)	Time(power Restored)
1/1/2006	Lightning		145	1	145		
1/1/2006	Other - Unknown		43	10	430		
1/1/2006	Lightning		416	24	9984		
1/1/2006	Lightning		254	9	2286		
1/1/2006	Other - Unknown		176	86	15136		
1/1/2006	Lightning		319	2	638		
1/1/2006	Lightning		178	3	534		
1/1/2006	Lightning		174	15	2610		
1/1/2006	Lightning		51	6	306		
1/2/2006	Tree/Limb on line		107	83	8881		
1/2/2006	Lightning		45	15	675		
1/2/2006	Tree/Limb on line		206	35	7210		
1/2/2006	Lightning		105	9	945		
1/2/2006	Other - Unknown		61	1	61		
1/2/2006	Lightning		110	5	550		
1/2/2006	Lightning		120	24	2880		
1/2/2006	Other - Unknown		49	1	49		
1/2/2006	Lightning		158	3	474		
1/2/2006	Lightning		142	5	710		
1/2/2006	Other - Unknown		56	1	56		
1/2/2006	Lightning		100	1	100		
1/2/2006	Lightning		64	2	128		
1/2/2006	Animal - Squirrel		140	1	140		
1/2/2006	Tree/Limb on line		172	14	2408		
1/3/2006	Tree/Limb on line		67	6	402		
1/3/2006	Animal - Squirrel		76	3	228		
1/3/2006	Lightning		81	1	81		
1/4/2006	Equipment Failure		1662	3	4986		
1/5/2006	Other - Unknown		199	1	199		
1/6/2006	Equipment Failure		32	2	64		
1/6/2006	Other - Unknown		79	7	553		
1/7/2006	Other - Unknown		62	2	124		
1/7/2006	Other - Unknown		47	7	329		

2006_RAW 2007_RAW 2008_RAW 2009_RAW

Step 6

**** IMPORTANT Notes prior to copying raw data to the TMED worksheet:**

- All outages with the DURATION (minutes) of **equal or less than 5 minutes should be deleted.**
- Only 'SUSTAINED INTERRUPTION' or outages with a duration of **more than 5 minutes shall be included**
- Columns highlighted in **YELLOW** are the only fields that are required to be filled when PASTING data directly on the TMED Outage Data sheet. The other fields can be left blank.
- DATE (power off) field SHALL contain **Date Entry ONLY** (*i.e. 1/24/2006*).
- **DO NOT COMBINE both DATE & TIME on the date (power off) field** (*i.e. 1/24/2006 1:45 pm*). Date/Time combo will cause **ERROR** in the TMED Calculation!
- Make sure that POWER SUPPLY outages are classified as "**POWER SUPPLY**" under "Cause" column.
- Make sure that PLANNED outages are classified as "**PLANNED**" under "Cause" column
- Make sure that you **SORT the Date (Power Off) from Oldest to present**

Step 7

- Click on the “2006 Outage_Raw” worksheet of the “Demo outage raw data.xls”
- Starting from cell “A3”, select row 3 (Column A to F) and the last row containing the outage data (select all rows containing outage data starting from row 3)
- Press “Ctrl-C” to Copy the selected rows

	A	B	C	D	E	F	G	H
1	2006 RAW Outage Data (DEMO)							
2	Date (power off)	Cause	Time (power off)	Duration (min)	Number of Customers	Customers-Minutes	Date(power Restored)	Time(power Restored)
3	1/1/2006	Lightning		145	1	145		
4	1/1/2006	Other - Unknown		43	10	430		
5	1/1/2006	Lightning		416	24	9984		
6	1/1/2006	Lightning		254	9	2286		
7	1/1/2006	Other - Unknown		176	86	15136		
8	1/1/2006	Lightning		319	2	638		
9	1/1/2006	Lightning		178	3	534		
10	1/1/2006	Lightning		174	15	2610		
11	1/1/2006	Lightning		51	6	306		
12	1/2/2006	Tree/Limb on line		107	83	8881		
13	1/2/2006	Lightning		45	15	675		
14	1/2/2006	Tree/Limb on line		206	35	7210		
15	1/2/2006	Lightning		105	9	945		
16	1/2/2006	Other - Unknown		61	1	61		
17	1/2/2006	Lightning		110	5	550		
18	1/2/2006	Lightning		120	24	2880		
19	1/2/2006	Other - Unknown		49	1	49		
20	1/2/2006	Lightning		158	3	474		
21	1/2/2006	Lightning		142	5	710		
22	1/2/2006	Other - Unknown		56	1	56		
23	1/2/2006	Lightning		100	1	100		
24	1/2/2006	Lightning		64	2	128		
25	1/2/2006	Animal - Squirrel		140	1	140		
26	1/2/2006	Tree/Limb on line		172	14	2408		
27	1/3/2006	Tree/Limb on line		67	6	402		
28	1/3/2006	Animal - Squirrel		76	3	228		
29	1/3/2006	Lightning		81	1	81		
30	1/4/2006	Equipment Failure		1662	3	4986		
31	1/5/2006	Other - Unknown		199	1	199		
32	1/6/2006	Equipment Failure		32	2	64		
33	1/6/2006	Other - Unknown		79	7	553		
34	1/7/2006	Other - Unknown		62	2	124		
35	1/7/2006	Other - Unknown		47	7	329		

Step 8

- Click newly created “2006_OutageData” worksheet from the **TMED Demo Excel Spreadsheet**
- Click on cell “A3” and press “Ctrl-V” (to paste copied data from “Demo outage raw data.xls”)
- You should now see the data that you have copied from the “Demo outage raw data.xls”

DEMO SpreadsheetDevelopmentRUSBulletinonInte

Home Insert Page Layout Formulas Data Review View Developer Add-Ins Acrobat

Paste Cut Copy Format Painter Clipboard Font Alignment Number

H10

2006 Outage Data Sheet							
Date (power off)	Cause	Time (power off)	Duration (min)	Number of Customers	Customers-Minutes	Date(power Restored)	Time(power Restored)
1/1/2006	Lightning		145	1	145		
1/1/2006	Other - Unknown		43	10	430		
1/1/2006	Lightning		416	24	9984		
1/1/2006	Lightning		254	9	2286		
1/1/2006	Other - Unknown		176	86	15136		
1/1/2006	Lightning		319	2	638		
1/1/2006	Lightning		178	3	534		
1/1/2006	Lightning		174	15	2610		
1/1/2006	Lightning		51	6	306		
1/2/2006	Tree/Limb on line		107	83	8881		
1/2/2006	Lightning		45	15	675		
1/2/2006	Tree/Limb on line		206	35	7210		
1/2/2006	Lightning		105	9	945		
1/2/2006	Other - Unknown		61	1	61		
1/2/2006	Lightning		110	5	550		
1/2/2006	Lightning		120	24	2880		
1/2/2006	Other - Unknown		49	1	49		
1/2/2006	Lightning		158	3	474		
1/2/2006	Lightning		142	5	710		
1/2/2006	Other - Unknown		56	1	56		
1/2/2006	Lightning		100	1	100		
1/2/2006	Lightning		64	2	128		
1/2/2006	Animal - Squirrel		140	1	140		
1/2/2006	Tree/Limb on line		172	14	2408		
1/3/2006	Tree/Limb on line		67	6	402		
1/3/2006	Animal - Squirrel		76	3	228		
1/3/2006	Lightning		81	1	81		
1/4/2006	Equipment Failure		1662	3	4986		
1/5/2006	Other - Unknown		199	1	199		
1/6/2006	Equipment Failure		32	2	64		
1/6/2006	Other - Unknown		79	7	553		
1/7/2006	Other - Unknown		62	2	124		
1/7/2006	Other - Unknown		47	7	329		
1/7/2006	Equipment Failure		235	5	1175		
1/7/2006	Equipment Failure		122	16	1952		

1Demo_OutageData 2006_OutageData 5555_OutageData

Step 9

- Next, you are ready to create a **new outage data worksheet** for the remaining years (2007-2009)
- Click **"Add-Ins"** from the Excel's drop down menu (located on the top of the window)
- Click **"TMEDToolBox"** from the "Add-Ins" submenu and click **"1b.Create Yearly Outage Sheet/Enter Directly in Outage Data Sheet"**
- A "Manual Input" box will appear (similar to Step 2)
- Enter **"2007"** on the entry field
- Click **"OK"**
- Follow the same procedures from **Step 3 to Step 8** to create the 2007 outage data sheet
- Repeat the same steps for the remaining years (2008 and 2009)

DEMO SpreadsheetDevelopmentRUSBulletinon

Home Insert Page Layout Formulas Data Review View Developer **Add-Ins** Acrobat

Bluetooth SnagIt Window

TMEDToolBox

- 1a. Input Data From RUS Interruption Report or;
- 1b. Create Yearly Outage Sheet/Enter Directly in Outage Data Sheet**
- 2. Create SAIDI Sheet
- 3. Create TMED/Part G Sheet
- 4. Sort Sheets
- View Existing Sheets
- Open TMEDToolbox Menu Window
- Help

	E	F	G	H
	Number of customers	Customers-Minutes	Date(power Restored)	Time(power Restored)
1	1	145		
10	10	430		
24	24	9984		
9	9	2286		
7	1/1/2006	Other - Unknown	176	86
8	1/1/2006	Lightning	319	2
9	1/1/2006	Lightning	178	3
10	1/1/2006	Lightning	174	15
11	1/1/2006	Lightning	51	6
12	1/2/2006	Tree/Limb on line	107	83
13	1/2/2006	Lightning	45	15
14	1/2/2006	Tree/Limb on line	206	35
15	1/2/2006	Lightning	105	9

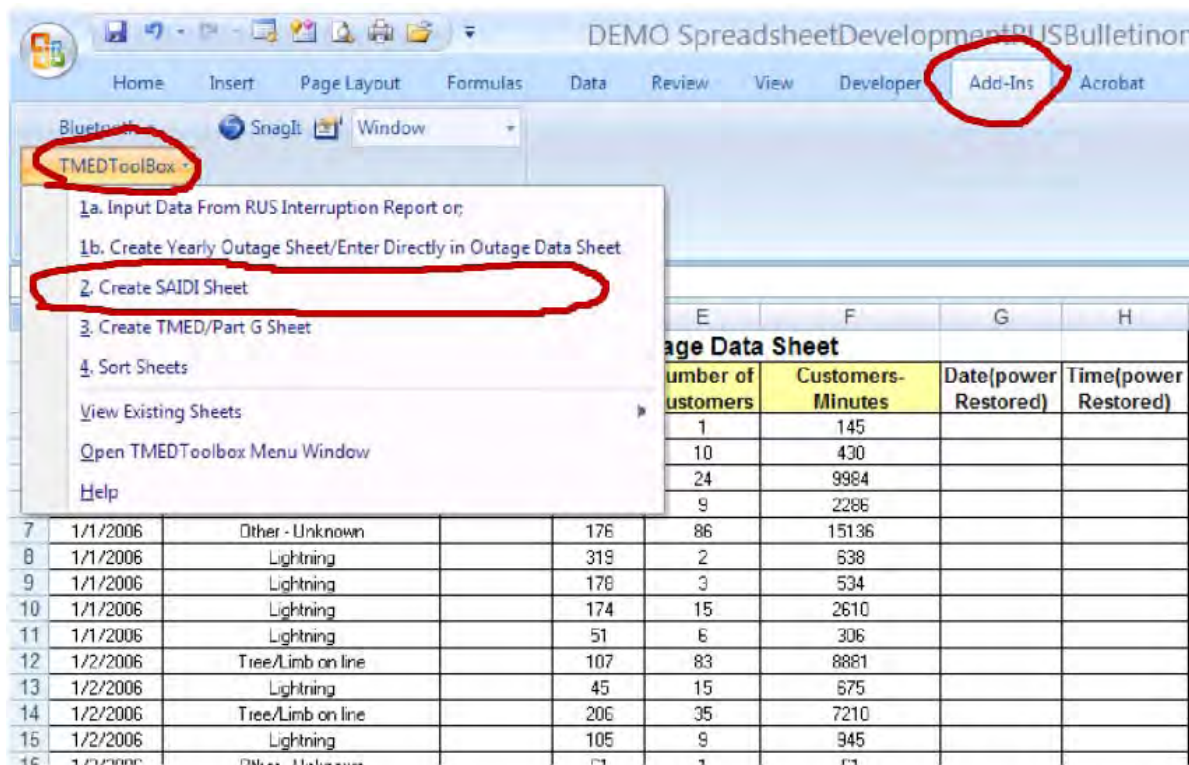
Step 10

- If completed correctly, you should have **2006-2009 outage data worksheets created** and rows populated with outage info on the bottom of the **TMED Demo Excel Spreadsheet**

2006 Outage Data Sheet							
Date (power off)	Cause	Time (power off)	Duration (min)	Number of Customers	Customers- Minutes	Date(power Restored)	Time(power Restored)
1/1/2006	Lightning		145	1	145		
1/1/2006	Other - Unknown		43	10	430		
1/1/2006	Lightning		416	24	9984		
1/1/2006	Lightning		254	9	2286		
1/1/2006	Other - Unknown		176	86	15136		
1/1/2006	Lightning		319	2	638		
1/1/2006	Lightning		178	3	534		
1/1/2006	Lightning		174	15	2610		
1/1/2006	Lightning		51	6	306		
1/2/2006	Tree/Limb on line		107	83	8881		
1/2/2006	Lightning		45	15	675		
1/2/2006	Tree/Limb on line		206	35	7210		
1/2/2006	Lightning		105	9	945		
1/2/2006	Other - Unknown		61	1	61		
1/2/2006	Lightning		110	5	550		
1/2/2006	Lightning		120	24	2880		
1/2/2006	Other - Unknown		49	1	49		
1/2/2006	Lightning		158	3	474		
1/2/2006	Lightning		142	5	710		
1/2/2006	Other - Unknown		56	1	56		
1/2/2006	Lightning		100	1	100		
1/2/2006	Lightning		64	2	128		
1/2/2006	Animal - Squirrel		140	1	140		
1/2/2006	Tree/Limb on line		172	14	2408		
1/3/2006	Tree/Limb on line		67	6	402		
1/3/2006	Animal - Squirrel		76	3	228		
1/3/2006	Lightning		81	1	81		
1/4/2006	Equipment Failure		1662	3	4986		
1/5/2006	Other - Unknown		199	1	199		
1/6/2006	Equipment Failure		32	2	64		
1/6/2006	Other - Unknown		79	7	553		
1/7/2006	Other - Unknown		62	2	124		
1/7/2006	Other - Unknown		47	7	329		
1/7/2006	Equipment Failure		235	5	1175		
1/7/2006	Equipment Failure		122	16	1952		

Step 11

- Next, you are ready to calculate the **Daily SAIDI worksheets** – in these worksheets, multiple daily outages are added together and the **SAIDI/day & natural log of SAIDI/day** are calculated
- Click **“Add-Ins”** from the Excel’s drop down menu (located on the top of the window)
- Click **“TMEDToolBox”** from the “Add-Ins” submenu and click **“2.Create SAIDI Sheet”**



Step 12

- A box called “Select outage-data year” will appear
- Click on “2006” and click “OK”

DEMO SpreadsheetDevelopmentRUSBulletinonInterruptionReport.xls

Home Insert Page Layout Formulas Data Review View Developer Add-Ins Acrobat

Bluetooth - Snagit Window -

Menu Commands Custom Toolbars

J17

2006 Outage Data Sheet							
Date (power off)	Cause	Time (power off)	Duration (min)	Number of Customers	Customers-Minutes	Date(power Restored)	Time(power Restored)
1/1/2006	Lightning		145	1	145		
1/1/2006	Other - Unknown		43	10	430		
1/1/2006	Lightning		416	24	9984		
1/1/2006	Lightning		254	9	2286		
1/1/2006	Other - Unknown		176	86	15136		
1/1/2006	Lightning		319	2			
1/1/2006	Lightning		178	3			
1/1/2006	Lightning		174	15			
1/1/2006	Lightning		51	6			
1/2/2006	Tree/Limb on line		107	83			
1/2/2006	Lightning		45	15			
1/2/2006	Tree/Limb on line		206	35			
1/2/2006	Lightning		105	9			
1/2/2006	Other - Unknown		61	1			
1/2/2006	Lightning		110	5			
1/2/2006	Lightning		120	24			
1/2/2006	Other - Unknown		49	1			
1/2/2006	Lightning		158	3			
1/2/2006	Lightning		142	5	710		
1/2/2006	Other - Unknown		50	1	50		

NOTE: All data with or less than 5 minutes Only 'SUSTAINED' than 5 minutes shall

Select Outage-Data Year

Choose Which Year

1Demo
2006
2007
2008
2009
5555

OK
Cancel
Help

Note: Co
that are
in the O
ATE (p
O NOT
ate/Tim

Step 13

- The next step (Step 14) will require you to enter the **average number of customers served per year for 2006**
- The average numbers (for all the years used for this demo) are located on the worksheet **"Cust_svd"** of the **"Demo outage raw data.xls"**
- You are not required to save your customers served per year data in this method (you can save your information in any format you wish)

DEMO outage raw data.xls

Yr	Cust Svd
2006	40641
2007	42030
2008	42650
2009	42570

Yr Year
CustSvd Average Number of Customers Served Per Year

2006_RAW 2007_RAW 2008_RAW 2009_RAW **Cust Svd**

Step 14

- Enter the **average number of customers served per year for 2006** and click "OK"

DEMO SpreadsheetDevelopmentRUSBulletinonInterruptionReport.xls [Cor

Data Review View Developer Add-Ins Acrobat

	D	E	F	G	H	I	J	K	L
	2006 Outage Data Sheet								
	Duration (min)	Number of Customers	Customers- Mi	Date(power	Time(power				
ff)	145	1							
	43	10							
	416	24							
	254	9							
	176	86							
	319	2							
	178	3							
	174	15							
	51	6							
	107	83							
	45	15							
	206	35							
	105	9							
	61	1							
	110	5							
	120	24							
	49	1							
	158	3							
	142	5	710						
	56	1	56						
	100	1	100						
	64	2	128						

Total number of customers

Enter utility's number of customers

40641

1 Demo
2006
2007
2008
2009
5555

OK
Cancel
Help

Note: Columns high
that are required t
in the OutageDat
ATE (power off) t
DO NOT COMBIN
ate/Time Combo

Step 15

- The program will take few seconds or more to process the calculation depending on the number of row data present on the worksheet
- Once completed, a new worksheet "2006_SAIDI" is created and the multiple outages per day are totaled in a single row of SAIDI/day
- The **natural log of SAIDI/day** is also calculated and the **average number of customers** is saved on cell "I3"

Bluetooth

TMEDToolBox

Menu Commands

Snagit

Window

Custom Toolbars

A3

1/1/2006

2006 SAIDI (Outage Type)			2006 SAIDI (Daily)			Total No. Customers 40641
Date (mm/dd/yy)	Cause	SAIDI/day (min)	Date (mm/dd/yy)	SAIDI/day (min)	ln(SAIDI/day)	
1/1/2006	ALL OTHER	0.004	1/1/2006	0.789	-0.237	
1/1/2006	ALL OTHER	0.011	1/2/2006	0.622	-0.475	
1/1/2006	ALL OTHER	0.246	1/3/2006	0.017	-4.046	
1/1/2006	ALL OTHER	0.056	1/4/2006	0.123	-2.098	
1/1/2006	ALL OTHER	0.372	1/5/2006	0.005	-5.319	
1/1/2006	ALL OTHER	0.016	1/6/2006	0.015	-4.188	
1/1/2006	ALL OTHER	0.013	1/7/2006	0.100	-2.306	
1/1/2006	ALL OTHER	0.064	1/8/2006	0.002	-6.028	
1/1/2006	ALL OTHER	0.008	1/9/2006	0.006	-5.091	
1/2/2006	ALL OTHER	0.219	1/11/2006	0.014	-4.241	
1/2/2006	ALL OTHER	0.017	1/12/2006	0.016	-4.126	
1/2/2006	ALL OTHER	0.177	1/13/2006	1.542	0.433	
1/2/2006	ALL OTHER	0.023	1/14/2006	0.019	-3.938	
1/2/2006	ALL OTHER	0.002	1/15/2006	0.302	-1.199	
1/2/2006	ALL OTHER	0.014	1/16/2006	0.014	-4.294	
1/2/2006	ALL OTHER	0.071	1/17/2006	0.012	-4.439	
1/2/2006	ALL OTHER	0.001	1/19/2006	0.001	-6.605	
1/2/2006	ALL OTHER	0.012	1/23/2006	0.010	-4.572	
1/2/2006	ALL OTHER	0.017	1/24/2006	0.157	-1.853	
1/2/2006	ALL OTHER	0.001	1/25/2006	0.026	-3.644	
1/2/2006	ALL OTHER	0.002	1/26/2006	0.049	-3.023	
1/2/2006	ALL OTHER	0.003	1/27/2006	0.004	-5.576	
1/2/2006	ALL OTHER	0.003	1/28/2006	0.003	-5.921	
1/2/2006	ALL OTHER	0.059	1/29/2006	3.809	1.337	
1/3/2006	ALL OTHER	0.010	1/30/2006	0.142	-1.955	
1/3/2006	ALL OTHER	0.006	1/31/2006	0.025	-3.669	
1/3/2006	ALL OTHER	0.002	2/1/2006	0.069	-2.673	
1/4/2006	ALL OTHER	0.123	2/2/2006	0.043	-3.154	
1/5/2006	ALL OTHER	0.005	2/3/2006	0.011	-4.526	
1/6/2006	ALL OTHER	0.002	2/4/2006	0.003	-5.664	
1/6/2006	ALL OTHER	0.014	2/6/2006	0.018	-4.044	
1/7/2006	ALL OTHER	0.003	2/8/2006	0.002	-6.158	
1/7/2006	ALL OTHER	0.008	2/9/2006	0.204	-1.590	
1/7/2006	ALL OTHER	0.029	2/10/2006	0.015	-4.172	
1/7/2006	ALL OTHER	0.048	2/11/2006	1.705	0.534	

2006_OutageData

2006_SAIDI

2007_OutageData

2008_OutageData

2009_OutageData

5555_OutageData

Step 16

- Repeat steps 10 to step 14 to create the SAIDI worksheets for years 2007-2009
- **VERY IMPORTANT **** Make sure that you create the yearly SAIDI worksheets in **sequential order** – from 2007-2009
- If successfully completed, you will see all SAIDI worksheets from 2006-2009 on the bottom of the **TMED Demo Excel Spreadsheet**

DEMO SpreadsheetDevelopmentRUSBulletinonInterruptionReport.xls [Com

Home Insert Page Layout Formulas Data Review View Developer Add-Ins Acrobat

Bluetooth - Snagit Window

TMEDToolBox -

Menu Commands Custom Toolbars

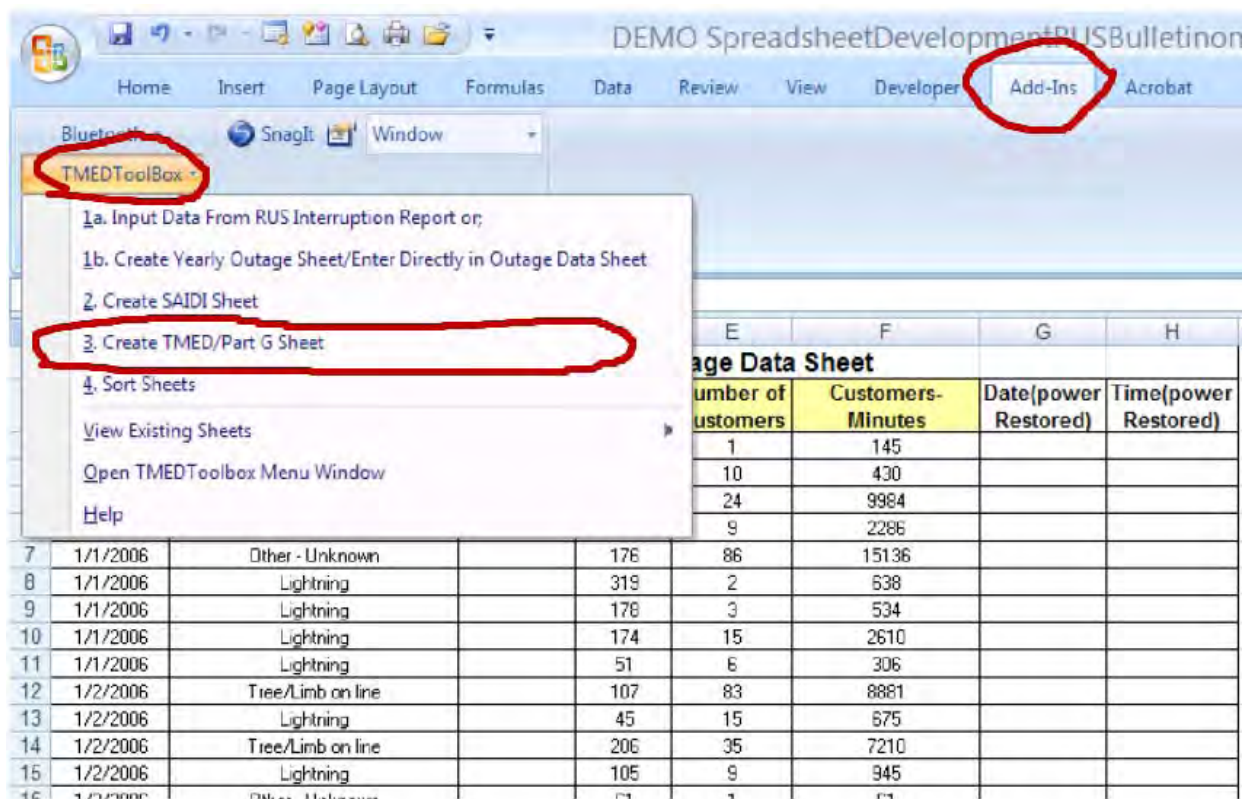
A3 1/2/2009

2009 SAIDI (Outage Type)			2009 SAIDI (Daily)			Total No. Customers
Date (mm/dd/yy)	Cause	SAIDI/day (min)	Date (mm/dd/yy)	SAIDI/day (min)	ln(SAIDI/day)	
1/2/2009	ALL OTHER	0.002	1/2/2009	0.002	-6.015	42570
1/3/2009	ALL OTHER	0.007	1/3/2009	0.009	-4.727	
1/3/2009	ALL OTHER	0.002	1/4/2009	0.061	-2.798	
1/4/2009	ALL OTHER	0.022	1/5/2009	0.060	-2.809	
1/4/2009	ALL OTHER	0.004	1/6/2009	0.211	-1.554	
1/4/2009	ALL OTHER	0.002	1/7/2009	1.757	0.563	
1/4/2009	ALL OTHER	0.002	1/8/2009	0.031	-3.471	
1/4/2009	ALL OTHER	0.031	1/9/2009	0.074	-2.603	
1/5/2009	ALL OTHER	0.058	1/10/2009	0.022	-3.798	
1/5/2009	ALL OTHER	0.001	1/11/2009	0.175	-1.741	
1/5/2009	ALL OTHER	0.002	1/12/2009	0.103	-2.274	
1/6/2009	ALL OTHER	0.003	1/13/2009	0.009	-4.680	
1/6/2009	ALL OTHER	0.002	1/15/2009	0.004	-5.506	
1/6/2009	ALL OTHER	0.001	1/16/2009	0.006	-5.145	
1/6/2009	ALL OTHER	0.205	1/17/2009	0.498	-0.698	
1/7/2009	ALL OTHER	0.017	1/18/2009	0.249	-1.390	
1/7/2009	ALL OTHER	0.180	1/19/2009	0.001	-6.689	
1/7/2009	ALL OTHER	0.001	1/20/2009	0.002	-6.368	
1/7/2009	ALL OTHER	0.229	1/21/2009	1.185	0.170	
1/7/2009	ALL OTHER	0.010	1/22/2009	0.005	-5.284	
1/7/2009	ALL OTHER	0.398	1/23/2009	0.018	-4.037	
1/7/2009	ALL OTHER	0.033	1/24/2009	0.012	-4.428	
1/7/2009	ALL OTHER	0.011	1/25/2009	0.010	-4.595	
1/7/2009	ALL OTHER	0.005	1/26/2009	0.019	-3.937	
1/7/2009	ALL OTHER	0.002	1/28/2009	1.603	0.472	
1/7/2009	ALL OTHER	0.863	1/29/2009	0.003	-5.807	
1/7/2009	ALL OTHER	0.005	1/30/2009	0.046	-3.080	
1/7/2009	ALL OTHER	0.003	1/31/2009	0.044	-3.115	
1/8/2009	ALL OTHER	0.030	2/1/2009	0.066	-2.714	
1/8/2009	ALL OTHER	0.001	2/2/2009	0.004	-5.511	
1/9/2009	ALL OTHER	0.001	2/3/2009	0.017	-4.078	
1/9/2009	ALL OTHER	0.071	2/4/2009	0.331	-1.107	
1/9/2009	ALL OTHER	0.001	2/5/2009	0.029	-3.530	
1/10/2009	ALL OTHER	0.015	2/6/2009	0.025	-3.702	
1/10/2009	ALL OTHER	0.000	2/7/2009	0.166	-1.796	

2006_OutageData 2006_SAIDI 2007_OutageData 2007_SAIDI 2008_OutageData 2008_SAIDI 2009_OutageData 2009_SAIDI

Step 17

- Now you are ready to calculate the **MED (Major Event Day) worksheets** – the TMED (threshold value), number of MEDs, MED minutes subtotal, Power Supply minutes subtotal, Planned minutes subtotal, year SAIDI minutes subtotal are calculated and saved in the MED worksheets
- In addition, the 5 year averages for the above mentioned categories and the **RUS Form7 Part G table (Service interruption)** are automatically created in the MED worksheets
- Click **“Add-Ins”** from the Excel’s drop down menu (located on the top of the window)
- Click **“TMEDToolBox”** from the “Add-Ins” submenu and click **“3. Create TMED/Part G Sheet”**



Step 18

- A box called **“Create and View Updated MED”** appears on the screen
- Click **“2007”** and click **“OK – you may be wondering why we skipped 2006. A minimum of one year’s worth of historical outage data is required to calculate the TMED (threshold value). There is no need to calculate the MED sheet for the oldest year (in this case 2006). If you accidentally click “2006” (oldest year), a reminder message will appear and the 2006 MED sheet will not be created**

2007 Outage Data Sheet							
Date (power off)	Cause	Time (power off)	Duration (min)	Number of Customers	Customers-Minutes	Date(power Restored)	Time(power Restored)
1/1/2007	Animal - Squirrel		91	33	3003		
1/2/2007	Animal - Squirrel		45	2	90		
1/2/2007	Deterioration		86	1	86		
1/2/2007			61	1	61		
1/2/2007	Fire		101	1	101		
1/2/2007	Overload		119	1	119		
1/3/2007	Other - Unknown		108	14	1512		
1/3/2007	Animal - Squirrel		26	6	156		
1/4/2007	Tree cut on line		44	15	660		
1/4/2007	Other - Unknown		115	1	115		
1/4/2007	Deterioration		146	2	292		
1/4/2007	Vehicles - Commercial		154	1	154		
1/5/2007	Tree/Limb on line		75	2	150		
1/5/2007	Other - Unknown		74	54	3996		
1/5/2007	Tree/Limb on line		100	2	200		
1/5/2007	Lightning		19	22	418		
1/6/2007	Other - Unknown		69	1	69		
1/7/2007	Animal - Squirrel		136	54	7344		
1/7/2007	Tree/Limb on line		163	60	9780		
1/8/2007	Lightning		323	15	4845		
1/8/2007	Tree/Limb on line		186	4	744		
1/8/2007	Tree cut on line		21	1563	32823		

Step 19

- A box called **“For Your Information”** will appear – this reminds you which years are included in the calculation for 2007 (in this case, 2006 is the only year present prior to 2007 , thus, 2006 is shown)

The screenshot shows a Microsoft Excel spreadsheet titled "2007 Outage Data Sheet". The spreadsheet has columns A through L. Columns A through F are highlighted in yellow. The data is as follows:

	A	B	C	D	E	F	G	H	I	J	K	L
1												
2	Date (power off)	Cause	Time (power off)	Duration (min)	Number of Customers	Customers-Minutes	Date(power Restored)	Time(power Restored)				
3	1/1/2007	Animal - Squirrel		91	33	3003						
4	1/2/2007	Animal - Squirrel		45	2	90						
5	1/2/2007	Deterioration		86	1	86						
6	1/2/2007			61	1	61						
7	1/2/2007	Fire		101	1	101						
8	1/2/2007	Overload		119	1	119						
9	1/3/2007	Other - Unknown		108	14	1512						
10	1/3/2007	Animal - Squirrel		26	6	156						
11	1/4/2007	Tree cut on line		44	15	660						
12	1/4/2007	Other - Unknown		115	1							
13	1/4/2007	Deterioration		146	2							
14	1/4/2007	Vehicles - Commercial		154	1							
15	1/5/2007	Tree/Limb on line		75	2							
16	1/5/2007	Other - Unknown		74	54							
17	1/5/2007	Tree/Limb on line		100	2							
18	1/5/2007	Lightning		19	22							
19	1/6/2007	Other - Unknown		69	1							
20	1/7/2007	Animal - Squirrel		136	54	7344						
21	1/7/2007	Tree/Limb on line		163	60	9780						
22	1/8/2007	Lightning		323	15	4845						
23	1/8/2007	Tree/Limb on line		186	4	744						

A dialog box titled "For Your Information!" is overlaid on the spreadsheet. It contains the text: "SAIDI-values to be included on the TMED calculation: 2006". There is an "OK" button and a red arrow pointing to it. A note on the right side of the spreadsheet states: "NOTE: All data with the DURATION or less than 5 minutes should be entered. Only 'SUSTAINED INTERRUPTION' data shall be entered." Another note at the bottom right states: "Note: Columns highlighted in yellow are required to be entered in the Outage Data Sheet (power off) file. DO NOT COMBINE Date/Time Combination." The spreadsheet also has a toolbar with "Bluetooth", "TMEDToolBox", and "Window" buttons, and a "Menu Commands" section with "Clipboard" and "Overload" buttons.

Step 20

- The program will take few seconds or more to process the calculation depending on the number of row data present on the worksheet
- Once completed, a **"2007_MED"** worksheet is created with the detailed breakdown of information including the **RUS Form & Part G**
- "MED Threshold"**, highlighted in yellow, is the **TMED value** – this value is compared to all SAIDI/day row data and any SAIDI/day value greater than the TMED is considered a Major Event Day (MED). In 2007, none of the SAIDI/day exceeded the TMED, thus, MED minutes is zero (0)

DEMO SpreadsheetDevelopmentRUSBulletinonInterruptionReport.xls [Compatibility Mode] - Microsoft Excel

Home Insert Page Layout Formulas Data Review View Developer Add-Ins Acrobat

Bluetooth + Snagit Window

TMEDToolBox +

Menu Commands Custom Toolbars

A3 1/1/2007

2007 SAIDI (Outage Type)			2007 SAIDI (Daily)			Total No. Customers	Alpha	Beta	MED Threshold	Annual MED SAIDI	Annual Total SAIDI
Date (mm/dd/yy)	Cause	SAIDI/day (min)	Date (mm/dd/yy)	SAIDI/day (min)	ln(SAIDI/day)						
1/1/2007	ALL OTHER	0.073	1/1/2007	0.073	-2.615	41030	-2.603	1.929	9.203	0.000	144.918
1/2/2007	ALL OTHER	0.002	1/2/2007	0.011	-4.497						
1/2/2007	ALL OTHER	0.002	1/3/2007	0.041	-3.203						
1/2/2007	ALL OTHER	0.001	1/4/2007	0.030	-3.515						
1/2/2007	ALL OTHER	0.002	1/5/2007	0.116	-2.153						
1/2/2007	ALL OTHER	0.003	1/6/2007	0.002	-6.388						
1/3/2007	ALL OTHER	0.037	1/7/2007	0.417	-0.874						
1/3/2007	ALL OTHER	0.004	1/8/2007	0.943	-0.059						
1/4/2007	ALL OTHER	0.016	1/9/2007	0.039	-3.241						
1/4/2007	ALL OTHER	0.003	1/10/2007	0.006	-5.113						
1/4/2007	ALL OTHER	0.007	1/11/2007	0.047	-3.062						
1/4/2007	ALL OTHER	0.004	1/15/2007	0.008	-4.869						
1/5/2007	ALL OTHER	0.004	1/16/2007	0.015	-4.205						
1/5/2007	ALL OTHER	0.097	1/17/2007	0.002	-6.432						
1/5/2007	ALL OTHER	0.005	1/18/2007	0.014	-4.268						
1/5/2007	ALL OTHER	0.010	1/19/2007	0.035	-3.365						
1/6/2007	ALL OTHER	0.002	1/20/2007	0.222	-1.505						
1/7/2007	ALL OTHER	0.179	1/21/2007	0.042	-3.180						
1/7/2007	ALL OTHER	0.238	1/22/2007	0.061	-2.798						
1/8/2007	ALL OTHER	0.118	1/23/2007	0.006	-5.150						
1/8/2007	ALL OTHER	0.018	1/24/2007	0.031	-3.463						
1/8/2007	ALL OTHER	0.800	1/25/2007	0.056	-2.880						
1/8/2007	ALL OTHER	0.006	1/26/2007	0.178	-1.724						
1/9/2007	ALL OTHER	0.005	1/27/2007	0.086	-2.457						
1/9/2007	ALL OTHER	0.003	1/28/2007	0.009	-4.671						
1/9/2007	ALL OTHER	0.021	1/29/2007	0.167	-1.788						
1/9/2007	ALL OTHER	0.010	1/30/2007	0.058	-2.848						
1/10/2007	ALL OTHER	0.004	1/31/2007	0.005	-5.233						
1/10/2007	ALL OTHER	0.002	2/1/2007	0.062	-2.774						
1/11/2007	ALL OTHER	0.005	2/2/2007	0.030	-3.502						
1/11/2007	ALL OTHER	0.001	2/3/2007	0.018	-3.993						
1/11/2007	ALL OTHER	0.020	2/5/2007	0.005	-5.396						
1/11/2007	ALL OTHER	0.021	2/6/2007	2.183	0.781						
1/15/2007	ALL OTHER	0.006	2/7/2007	0.019	-3.941						
1/15/2007	ALL OTHER	0.011	2/8/2007	0.002	-6.228						

NOTE: The cells in columns C with yellow background are classified as Major Event Days, because their SAIDI/day values exceed the MED Threshold. This MED Threshold is based on the following years: 2006

Part G. Service Interruptions					
Term	SAIDI (in minutes)				Total
	Power Supply	Major Event	Planned	All Other	
1. Present Year	1.07	0.00	0.00	143.84	144.92
2. Five Year Average	Not Available	Not Available	Not Available	Not Available	Not Available

NOTE: 'Not Available' means that previous year is unavailable

2006_SAIDI 2007_MED 2007_OutageData 2007_SAIDI 2008_OutageData 2008_SAIDI 2009_OutageData 2009_SAIDI 5555_OutageData

Step 21

- Create new MED worksheets for the remaining years (2008-2009) by repeating **steps 17 to 20**
- **VERY IMPORTANT **** Make sure that you create the yearly MED worksheets in sequential order – from 2007 to 2009
- If successfully completed, you will see all MED worksheets from 2007-2009 on the bottom of the **TMED Demo Excel Spreadsheet**
- Normally, there are **two important values** that are reported yearly:
 - **Yearly Total SAIDI** - i.e. 155.01 minutes for 2009
 - **Yearly SAIDI excluding MED (Total minutes less Major Event minutes** from art G:Service Interruption table) – because 2009 has zero “Major Event” minutes, the “Yearly SAIDI excluding MED” is also 155.01 minutes

DEMO SpreadsheetDevelopmentRUSBulletinonInterruptionReport.xls [Compatibility Mode] - Microsoft Excel

Data Review View Developer Add-Ins Acrobat

2009 SAIDI (Daily)			Total No. Customers												
Date n/dd/yy	SAIDI/day (min)	ln(SAIDI/day)													
1/2/2009	0.003	-5.991	41570	Alpha	-2.576										
1/3/2009	0.009	-4.703		Beta	1.950										
1/4/2009	0.062	-2.775		MED Threshold	9.971										
1/5/2009	0.062	-2.785		Annual MED SAIDI	0.000										
1/6/2009	0.217	-1.530		Annual Total SAIDI	155.010										
1/7/2009	1.799	0.587		NOTE: The cells in columns C with yellow background are classified as Major Event Days, because their SAIDI/day values exceed the MED Threshold. This MED Threshold is based on the following years:											
1/8/2009	0.032	-3.447													
1/9/2009	0.076	-2.580													
1/10/2009	0.023	-3.774													
1/11/2009	0.180	-1.718													
1/12/2009	0.105	-2.250													
1/13/2009	0.010	-4.656													
1/15/2009	0.004	-5.482													
1/16/2009	0.006	-5.122													
1/17/2009	0.510	-0.674													
1/18/2009	0.255	-1.366													
1/19/2009	0.001	-6.665													
1/20/2009	0.002	-6.345													
1/21/2009	1.213	0.193													
1/22/2009	0.005	-5.260													
1/23/2009	0.018	-4.014													
1/24/2009	0.012	-4.405													
1/25/2009	0.010	-4.571													
1/26/2009	0.020	-3.914													
1/28/2009	1.642	0.496													
1/29/2009	0.003	-5.783													
1/30/2009	0.047	-3.056													
1/31/2009	0.045	-3.091													
2/1/2009	0.068	-2.690													
2/2/2009	0.004	-5.488													
2/3/2009	0.017	-4.054													
2/4/2009	0.339	-1.083													
2/5/2009	0.030	-3.507													
2/6/2009	0.025	-3.679													
2/7/2009	0.170	-1.773													

Part G. Service Interruptions						
Term	SAIDI (in minutes)			Planned	All Other	Total
	Power Supply	Major Event				
1. Present Year	19.70	0.00		10.35	124.96	155.01
2. Five Year Average	10.550	0		3.45	136.13	150.13

MED 2008_OutageData 2008_SAIDI 2009_MED 2009_OutageData 2009_SAIDI 5555_OutageData

Step 22 (REVIEW)

- Creating your first **OutageData, SAIDI and MED worksheets** will be time consuming because you are actually re-entering and calculating data for all historical years. However, once you have successfully setup your historical data by year, your future yearly input will be much quicker and much easier to do. For example, to enter the 2010 raw outage data, you will only need 3 steps:
 1. Create 2010_OutageData worksheet and copy/paste outage data
 2. Create a 2010_SAIDI worksheet
 3. Finally, create a 2010_MED worksheet to view the final SAIDI calculations
- Here are few important reminders:
 - **Read Step 6_** on page 6 - ****IMPORTANT** Notes prior to copying raw data to the TMED worksheet
 - **Create the SAIDI and MED yearly worksheets in sequential order – from oldest to present**
- For further inquiries contact:

Alvin M. Razon

NRECA- Energy and Environmental Policy Department
4301 Wilson Blvd., SS9-204
Arlington, VA 22203
Phone: 703-907-5740
Cell: 703-850-6591
Fax: 703-907-5518
alvin.razon@nreca.coop

//version09242010

//TMED software is part of the RUS Bulletin 1739a-119 Interruption Reporting and Service Continuity Objectives for Electric Distribution System). Major Event Day methodology is based on the IEEE 1366 Guide for Electric Power Distribution Reliability Indices